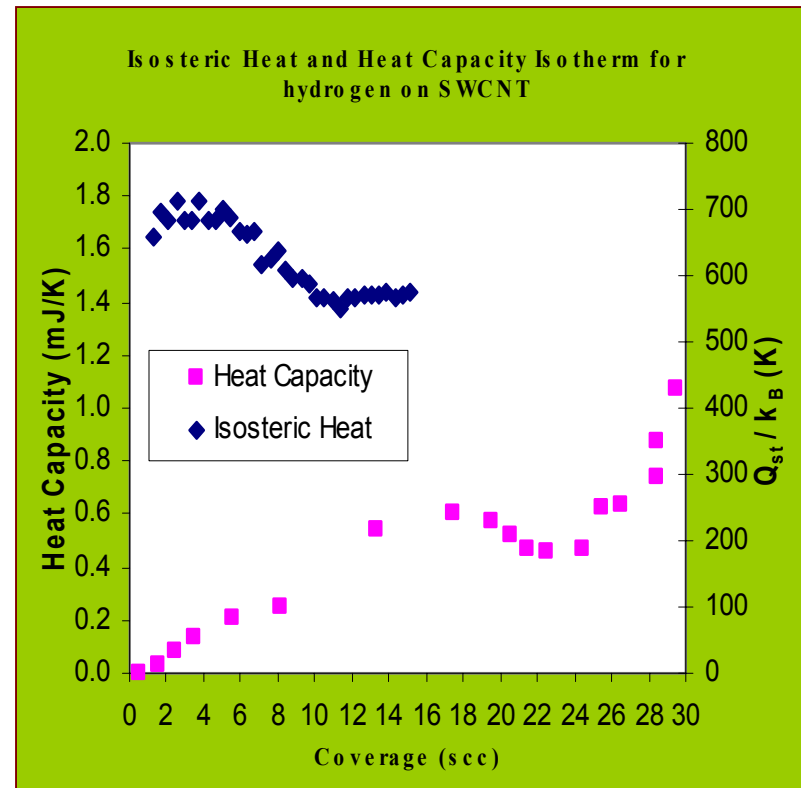


Novel 1- and 2-Dimensional Systems

Oscar E. Vilches (PI) and Larry B. Sorensen (co-PI)

Dep. of Physics, U. of Washington, DMR 0245423

Carbon nanotube bundles are used to study 1-D and 2-D matter. Bundles may provide a matrix for high density storage of gases. Fig. 1 shows, for a given bundles sample, the growth of 1-D hydrogen (H_2) in grooves between tubes (0 to 10 scc adsorbed), 2-D H_2 on outside graphite-like surfaces (10 to 22 scc), and of a 2nd layer of molecules (above 22 scc), derived from adsorption isotherms and heat capacity data.



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Education:

Five undergraduates (Dan Vandervelde, Jeff Schneble, Devin Holmes, Eric Higgins and Damien Ramunno-Johnson), and two graduate students (Tate Wilson and Subramanian Ramachandran), working with both PI's, have and are contributing to various aspects of the nanotubes projects. Dan (Mary Gates fellow at UW) graduated in June, 2003, and is studying Physics at the U. of Illinois. Damien had a Summer NASA Space Grant fellowship, and Devin was a Summer 2003 REU student from Oklahoma Baptist U. (sponsored by NSF). Tate will receive his PhD in March, 2004.

Outreach:

The PI has an ongoing collaboration with Kenyon Park Jr. High School to run a science program, usually during Winter or Spring Quarters. The most recent program focused on hearing and vision.

Demonstrations from the very extensive Physics Department collection are carried out to the school, where an interactive program is setup and repeated five times during the day. In Winter/Spring, the PI participates in a Math Day program at the U. of Washington, geared to middle school students from a predominantly minority neighborhood. The program (last March about time, timing, reaction times, and statistics) was wildly enjoyed by the students.